Applied Mathematical Sciences, Vol. 7, 2013, no. 100, 4949 - 4952
HIKARI Ltd, www.m-hikari.com
http://dx.doi.org/10.12988/ams.2013.36414

Comparative Vendor Score

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Abstract

This paper analyzes the components of the linear form that defines the method for evaluating supplier companies. Evaluation is carried out from the point of view of the single consumer. Factor analysis has been done on the basis of the data obtained about the supplier companies of Russian railways company.

Keywords: Vendor score, Linear form, Compare vendors.

1 Introduction

The task of choosing vendors by clear and simple mathematically sound estimates is highly relevant today (see. [1-5]). In this work we consider the method of calculation of the vendor score and received from it the comparative score, developed in [6].

In the factor analysis, we obtained a set of indicators that determine the production and business activities score of the vendor. This is done from the point of view of the consumer — Russian railway company [7].

2 Factors included to the vendor scores

1. Efficiency of enterprise asset $E = \frac{Q_s}{S_{ea}}$, where Q_s – amount of sales for the reporting period; S_{ea} – the amount of enterprise asset.
2. Capital intensity $F = \frac{V_{awc}}{Q_s}$, где V_{awc} – amount of working capital.

3. The share D of total production, sold to consumer company.
4. Profitability $R = P_F/Q_s$ characterizes the performance of the vendor as a result of the profit P_F.
5. The share of loans in the vendor's turnover $S = V_{bwc}/V_{awc}$. V_{awc} – the amount of working capital; V_{bwc} – amount of money in circulation enterprises to borrow (at banks, investment companies, third-party companies, etc.).
6. The share of own funds allocated for the development of the vendor $W = \frac{V_{od}}{V_{od}+V_{bd}+V_{id}}$, where V_{od} – amount of own funds intended for the reporting period in the development of the enterprise; V_{bd} – the amount of borrowed funds aimed at the development of the vendor; V_{id} – funds allocated for the development of the vendor by third party investors.
7. The share of loanable funds to the development of enterprises in relation to the enterprise asset $K = \frac{V_{bd}}{S_{ea}}$.
8. Share of capacity utilization for the reporting period $B = \sum_{i=1}^{M} Q_i / \sum_{i=1}^{M} W_i$, where M – the number of items manufactured products; Q_i – the amount of produced enterprise product i-th commodity item (i-type) for the reporting period; W_i – production capacity in terms of production of i-bearing type, that is the maximum possible amount of production, the production of which in principle feasible in the vendor.
9. The wear I active fixed production assets of the enterprise, %.
10. The share of sales for the period $L = \frac{Q_s}{Q_p}$, where Q_s – the amount of sales for the reporting period; Q_p – total production.
11. The range of products of various kinds (types) of products produced by the vendor, M.
12. Unit cost of production enterprises, including delivery, C.

3 Calculation of the vendor scores

$$\Omega^{(i)} = w_1\alpha_1 E_i + w_2\alpha_2 F_i + w_3\alpha_3 \frac{1}{1+10(D_i-\beta_{opt})^2} + w_4\alpha_4 \frac{1}{1+10(R_i-\delta_{opt})^2} + w_5\alpha_5 \frac{1}{1+10(S_i-\chi_{opt})^2} + w_6\alpha_6 W_i + w_7\alpha_7 \frac{1}{K_i} + w_8\alpha_8 \frac{1}{1+10(B_i-\gamma_{opt})^2} + w_9\alpha_9 \frac{1}{I_i} + w_{10}\alpha_{10} L_i + w_{11}\alpha_{11}\sqrt{M_i} + w_{12}\alpha_{12} \frac{1}{C_i}$$

The formula contains a value β_{opt}, δ_{opt}, χ_{opt} and γ_{opt} that having the following economic sense:

β_{opt} – the optimum value of the share of vendor cross section in question,

directed to the consumer company in relation to the total amount sold by the vendor;

δ_{opt} – optimal level of profitability for businesses in the cross section in the industry in the current economic situation, %;

χ_{opt} – the optimal size of leverage in the cross section in the back of the enterprise in the industry in the current economic situation;

γ_{opt} – optimum level of capacity utilization in the cross section in the vendor of the industry in the current economic situation.

The values β_{opt}, δ_{opt}, χ_{opt} and γ_{opt} of the optimum values set us empirically, based on practical experience. In further studies are subject to change and are derived from statistical data.

4 Conclusion

Developed a linear form, which allows you to compare vendors. Comparison is made on economic parameters. The behavior of individual indicators form will be examined in further studies.
It is of interest to create a comparative measure of the absolute evaluation to obtain the normalized vendor.

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Received: July 24, 2013